

REMARKS

This responds to the Office Action mailed on March 3, 2008.

Claims 27, 44, 47, 50 and 52 are amended, claim 33 is canceled, and no claims are added; as a result, claims 28, 36-38 and 44-52 are now pending in this application.

§103 Rejection of the Claims

Claims 27, 33, 36-38 and 44-52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,541,164 to Kumar *et al.* (hereinafter, “the Kumar reference”) in view of Applicant’s admitted prior art (hereinafter, “the APA”), or alternatively, as being unpatentable over the Kumar reference in view of the APA and U.S. Patent No. 4,905,073 to Chen *et al.* (hereinafter, “the Chen reference”). Applicants disagree with the stated grounds of rejection and desire to further clarify various distinctions of the present invention over the cited art. Reconsideration of the present application is therefore requested in light of the following remarks.

Although the disclosed embodiments of the invention may be discussed in comparison to the prior art, it is understood that any discussion of the disclosed embodiments, as well as any discussion of the differences between the disclosed embodiments of the present invention and the prior art do not define the scope or interpretation of any of the claims. Instead, such discussed differences, if presented, are offered merely to help the Examiner appreciate important claim distinctions as they are discussed.

The Kumar reference is cited for disclosing a gate stack that includes, *inter alia*, a gate oxide layer formed on a substrate, a polysilicon layer formed on the gate oxide layer, a tungsten silicide layer formed on the polysilicon layer, an antireflection layer formed on the tungsten silicide layer, and a silicon nitride layer disposed on the antireflection layer. (Office Action; page 2-5).

Applicants maintain that the cited references (e.g., the Kumar reference, and the Chen reference) fail to disclose, or to fairly suggest that the disclosed antireflection layer is functionally operable to reducing a stress imposed on a gate stack. Specifically, it is asserted that the disclosed antireflection layer is operable to reduce a stress that may be imposed by an adjacent silicon nitride layer. Applicants note, in particular, that the disclosed antireflection

layer is operable to reduce a stress imposed by a silicon nitride layer that has a thickness greater than 1000 Angstroms.

The cited portion of the Kumar reference (*e.g.*, col. 9, lines 35-37) discloses that the silicon nitride layer “...ranges from about 10 Angstroms to about 1000Angstroms...”). In the present application, the various embodiments may include a silicon nitride layer having a thickness that may be greater than 1000 Angstroms. Consequently, the disclosed silicon nitride layer may be considerably thicker than the silicon nitride layer disclosed in the Kumar reference.

The Kumar reference also discloses an “optimized” thickness of the antireflective layer is 300 Angstroms (col. 30, lines 60-61). In contrast, in the various embodiments as disclosed in the present application, the antireflective layer may range in thickness between about 250 Angstroms and about 650 Angstroms. Accordingly, the antireflective layer in the present application may also include thicknesses that are considerably greater than those taught in the Kumar reference.

Turning now to the claims, differences between the claim language and the applied references will be specifically pointed out. Claim 27, as amended, recites in pertinent part: “A gate stack, comprising...a layer comprising $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$...*wherein a thickness of the layer comprising $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ ranges between a value that is greater than about 300 Angstroms (\AA) to a value of approximately 650 \AA ...and...a silicon nitride layer on the layer comprising $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ and having a thickness greater than 1000 \AA ...*”(Emphasis added). Applicants note that the Kumar reference and the Chen reference do not disclose or fairly suggest this. Applicants therefore respectfully submit that claim 27 is now allowable. Claims depending from claim 27 are also allowable based upon the allowable form of the base claim, and further in view of the additional limitations recited in the dependent claims.

Claim 44, as amended, presently recites: “A gate stack, comprising...*a silicon nitride layer on the $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ layer having a thickness greater than 1000 \AA .*” (Emphasis added). Again, the Kumar and Chen references do not disclose, or fairly suggest this. Applicants therefore respectfully submit that claim 44 is also now allowable over the cited references. Claims depending from claim 44 are also allowable based upon the allowable form of the base claim, and further in view of the additional limitations recited in the dependent claims.

Claim 47 depends from claim 44, and is amended to recite, in pertinent part: “The gate stack of claim 44, wherein the $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ layer *has a thickness that ranges from a value greater than approximately 300 Å to a value of approximately 650 Å.*” (Emphasis added). Again, none of the applied references disclose or suggest this. Claim 47 is therefore in allowable form.

Claim 50, as amended, recites in pertinent part: “A gate stack, comprising...*a silicon nitride layer on the $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ layer having a thickness greater than 1000 Å.*” (Emphasis added). The Kumar and Chen references simply do not disclose, or fairly suggest this. Applicants therefore respectfully submit that claim 50 is presently allowable over the cited references. Claims depending from claim 50 are also allowable based upon the allowable form of the base claim, and further in view of the additional limitations recited in the dependent claims.

Finally, claim 52 depends from claim 50, and is amended to recite, in pertinent part: “The gate stack of claim 52, wherein the $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ layer *has a thickness that ranges from a value greater than approximately 300 Å to a value of approximately 650 Å.*” (Emphasis added).

Applicants therefore submit that the claims are distinguishable from the applied references. Accordingly, Applicants respectfully request that the rejections under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 349-9587 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.


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Date

2 May '08

By


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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: MS AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 2nd day of May 2008.

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